

The Examiner has rejected claims 1, 4, 6, 8, 9, 12, 13, 18, and 21 under 35 USC §§103(a) based on combination of U.S. Patent No. 4,421,180 to Fleishman et al. in view of U.S. Patent Nos. 6,102,133 to Scheid et al. and 3,789,930 to Nishimura et al. The Applicant respectfully submits that the Examiner has failed to establish a prima facie case of obviousness based on the Fleishman, Scheid, and Nishimura references.

Initially, the Applicant respectfully submits that the Examiner has combined references that belong to non-analogous art. The base Fleishman reference relates to a pile driving system commonly referred to as a "drop hammer". A drop hammer comprises a ram that is raised and dropped onto the pile or member to be driven, with the driving force being generated solely by the force of gravity on the ram. A separate mechanism must be provided to raise the ram.

The Scheid and Nishimura references, in contrast, relate to a pile driving system commonly referred to as a "diesel hammer". A diesel hammer comprises a ram that, when dropped, compresses fuel within a closed chamber. The compressed fuel ignites to drive the pile or member or other member to be driven; the ignited fuel also drives the ram upwards to start the next cycle. Importantly, the ram itself does not contact and/or drive the pile. In this context, the ram need only be dropped once, with the diesel hammer repeating its ignition cycle automatically as long as fuel is introduced into the closed chamber.

The Applicant respectfully submits that, because of fundamental differences between drop hammers and diesel hammers, one of ordinary skill in the art would not look to the Scheid and Nishimura references to modify the teachings of the Fleishman reference. In particular, a diesel hammer fundamentally differs from a drop hammer in that a diesel hammer injects and ignites fuel below the ram, while a drop hammer does not. A diesel hammer thus requires a valve system for injecting fuel and extracting exhaust. A drop hammer has none of these concerns. Additionally, the expanding gasses created by the ignited fuel simultaneously drive the pile down and the ram upward.

Additionally, drop hammers conventionally have been designed without seals at the ram member to allow the ram to free fall as described in the Fleishman reference. Simply grafting seals as employed by diesel hammers such as those described in the Scheid and Nishimura references onto a drop hammer as recited in the Fleishman reference would effectively prevent movement of the drop hammer without provision of a vent port as recited in the claims. The vent port recited in the claims allows the ram member to free fall above the preload position and, just prior to reaching the impact position, forms a seal chamber that results in a preload

force being applied. Without such a strategically located vent port, the ram member of a drop hammer will not drop.

Accordingly, the Applicant respectfully submits that one of ordinary skill in the art would not look to the art of diesel hammers to modify a drop hammer because a drop hammer does not directly employ ignited fuel, does not employ a fuel injection system, and does not employ a ram that directly drives the pile. The Applicant thus respectfully requests withdrawal of the rejection based on the combination of the Fleishman, Scheid, and Nishimura references.

However, even if proper, the Applicant respectfully submits that the combination of the Fleishman, Scheid, and Nishimura references does not disclose, teach, or suggest the present invention as recited in claims 1, 13, and 18.

Initially, the Applicant respectfully submits that these references do not disclose the arrangement of the vent port and seals as recited in claims 1, 13, and 18. As recited in the claims, the vent port is arranged relative to the seals to establish a preload force on the helmet member prior to impact of the ram member on the helmet member. The Applicant respectfully submits that the cited references, taken alone or in combination, fail to disclose this arrangement of seals and vent port.

With respect to the Nishimura reference, that reference recites a strike cushion 19 arranged between a ram 17 and a plate 27. The strike cushion does not move relative to a housing 21. In contrast, the helmet member recited in the claims moves between two positions relative to the housing. The Applicant respectfully submits that the strike cushion of the Nishimura reference does not disclose, teach, or suggest the helmet member as recited in the claims.

Furthermore, the strike cushion prevents direct engagement of the ram 17 and plate 27. Claims 1, 13, and 18 have been amended to emphasize that the ram and helmet member are rigid and that the ram member directly impacts the helmet member. The Applicant respectfully submits that the amendments to the claim emphasize the differences between the present invention as recited in the claims and the cited combination as defined by the Examiner.

Additionally, as described in the specification with reference to FIGS. 2-4, the use of a preload force acts to reduce the magnitude of any reflected tension stresses in the pile. Reducing such tension stresses reduces tension cracking in concrete piles. Nothing in the cited references discloses the use of a drop hammer with a preload chamber as described in the claims, nor do the cited references recognize the problems associated with reflected tension stresses in the pile using a conventional drop hammer. Because the prior art has failed to recognize the beneficial effects of a preload force during pile driving, the Applicant respectfully

submits that, absent the Applicant's own disclosure, nothing in the record would motivate one of ordinary skill in the art to modify the drop hammer of the Fleishman reference with the seals of a diesel hammer such as disclosed in the Scheid and Nishimura references in conjunction with a vent port that yields a preload force.

To the contrary, the Examiner has stated that the motivation to modify the Fleishman reference with the seal system as taught by Scheid is "to provide an airtight chamber" and thereby "reduce the impact between the ram and the anvil and thus also ... reduce the noise generated by the apparatus."

The Applicant respectfully submits that the use of an airtight chamber is contrary to conventional drop hammer design because such an air chamber inhibits movement of the ram. The airtight chamber is only of utility when formed by seals and a vent port carefully arranged to provide a preload force as recited in the claims. Again, nothing in the cited references discloses, teaches, or suggests the use of such a preload force or the benefits thereof.

Furthermore, the Applicant respectfully submits that noise reduction is not a goal of the present invention. To the contrary, the present invention is a drop hammer, and the Scheid reference teaches that such drop hammers are preferred when noise is an issue.

The motivation cited by the Examiner for making the cited combination is thus not supported by the evidence of record. To the contrary, the evidence of record suggests that noise is not a problem with drop hammers. The Applicant thus respectfully submits that the motivation proffered by the Examiner has no bearing in the art of drop hammer design and does not establish proper motivation to make the combination cited by the Examiner.

Given the foregoing, the Applicant respectfully submits that the Examiner has failed to establish a prima facie case of obviousness under 35 USC § 103(a) because the cited references are not properly combinable as suggested by the Examiner; the resulting combination does not contain each and every element of the claims; and the Examiner has failed to establish proper motivation for one of ordinary skill in the art to make this combination.

Submitted herewith is a document (entitled Exhibit A - Listing of All Claims and Amendments (08-11-2008)) containing a listing of the claims as currently presented. The Listing attached herewith contains the text of each pending claim, along with any amendments made hereby (illustrated using strikethrough and underlining) and the status of each pending claim.

Given the foregoing, the Applicants respectfully submit that currently pending claims 1, 4, 6, 8, 9, 12, 13, 18, and 21 are in condition for allowance, and such allowance is respectfully requested. If there is any matter which could be expedited by consultation with the Applicants'

attorney, such would be welcome. The Applicants' attorney can normally be reached at the telephone number below.

Signed at Bellingham, County of Whatcom, State of Washington this 11th day of August, 2008.

Respectfully submitted,

<p>JOHN L. WHITE</p> <p>By <u>Michael R. Schacht</u> Michael R. Schacht, Reg. No. 33,550 Customer No. 30662 2801 Meridian Street, Suite 202 Bellingham, WA 98225-2400 phone: (360) 647-0400 fax: (360) 647-0412</p>	<p style="text-align: center;">CERTIFICATE OF MAILING 37 C.F.R. §1.8</p> <p>I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service as first class mail in an envelope addressed to Mail Stop RCE Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.</p> <p>Signature: <u>Susie Hubka</u> Print Name: Susie Hubka Date: August 11, 2008</p>
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